INEEL SNF PROGRAM

presented to

The National Spent Nuclear Fuel Program Strategy Meeting October 16-18, 2001

presented by

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October 16, 2001

INEEL SNF Program

I. The DOE-ID Team

II. Scope of the Task

III. INEEL's SNF Programmatic End Goals

IV. INEEL's SNF Management Strategy

V. INEEL SNF Drivers/Milestones

VI. The Ten Year Plan (TYP)

VII. The Site-Specific TYP

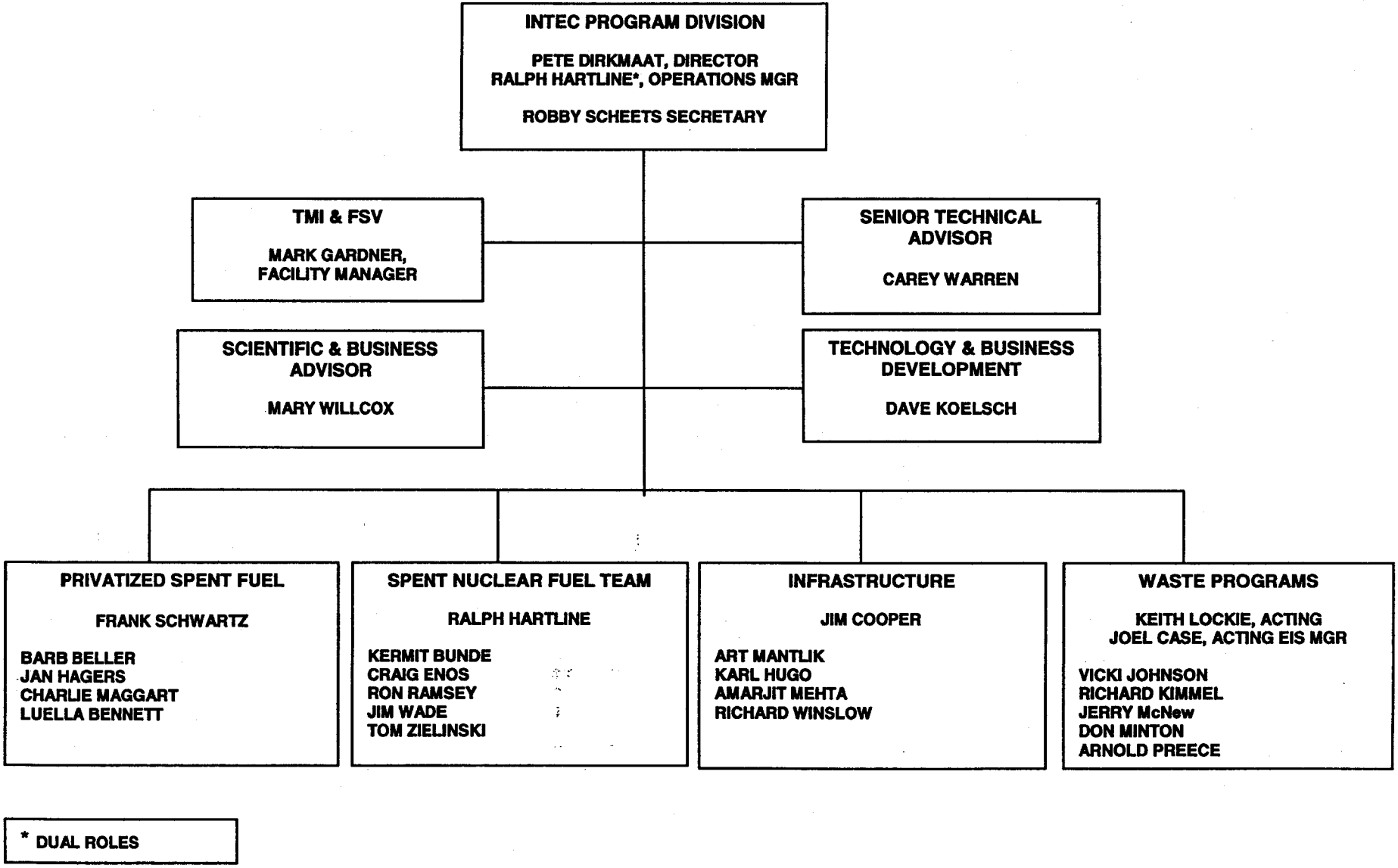
VIII. INEEL SNF Baseline Disposition Map

IX. The Plan

X. Program Status and Risk

I. The DOE-ID SNF Team

INTEC PROGRAMS DIVISION ORGANIZATION CHART



August 2001

II. SCOPE OF THE TASK

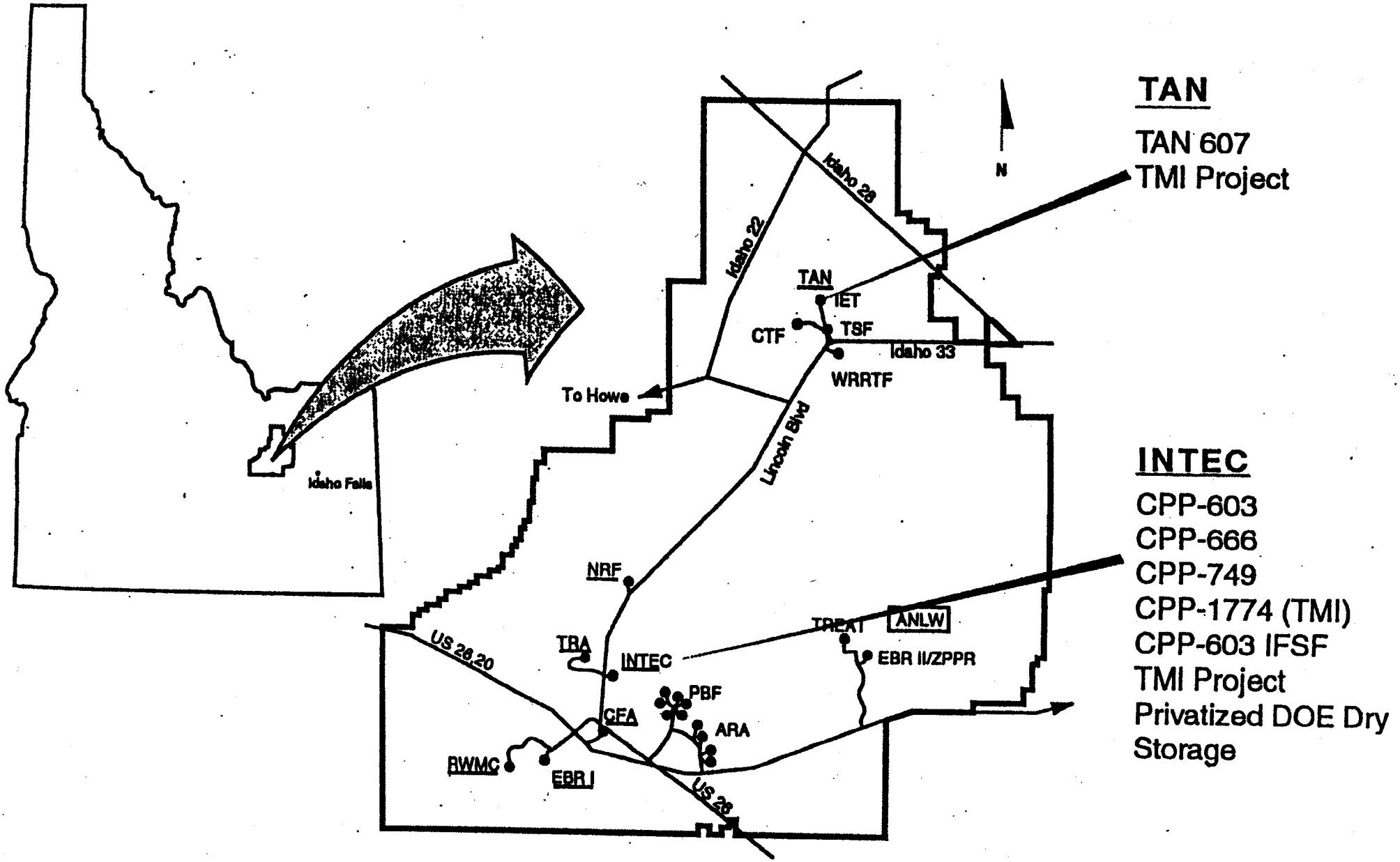
1. **INEEL currently maintains about 220 specific fuel types, 250 MTHM, 632 m^3, 20,500 FU (including Navy inventory) or 51% (by volume) of DOE fuel.**

2. **By 2035, the INEEL will have managed 311.4 MTHM, 731 m^3, 34,200 FU of SNF.**

3. **DOE-ID manages SNF in some 11 facilities spread across the 890 mi^2 of the INEEL, and one commercial facility located off site.**

4. **INEEL continues to receive, or will receive SNF shipments from:**
   a. **domestic sources**
      - **Seven DOE facilities**
      - **Sixteen US universities**
      - **Eight non-DOE research facilities**
   b. **foreign sources**
      - **19 foreign countries**

INEEL Spent Nuclear Fuel Program

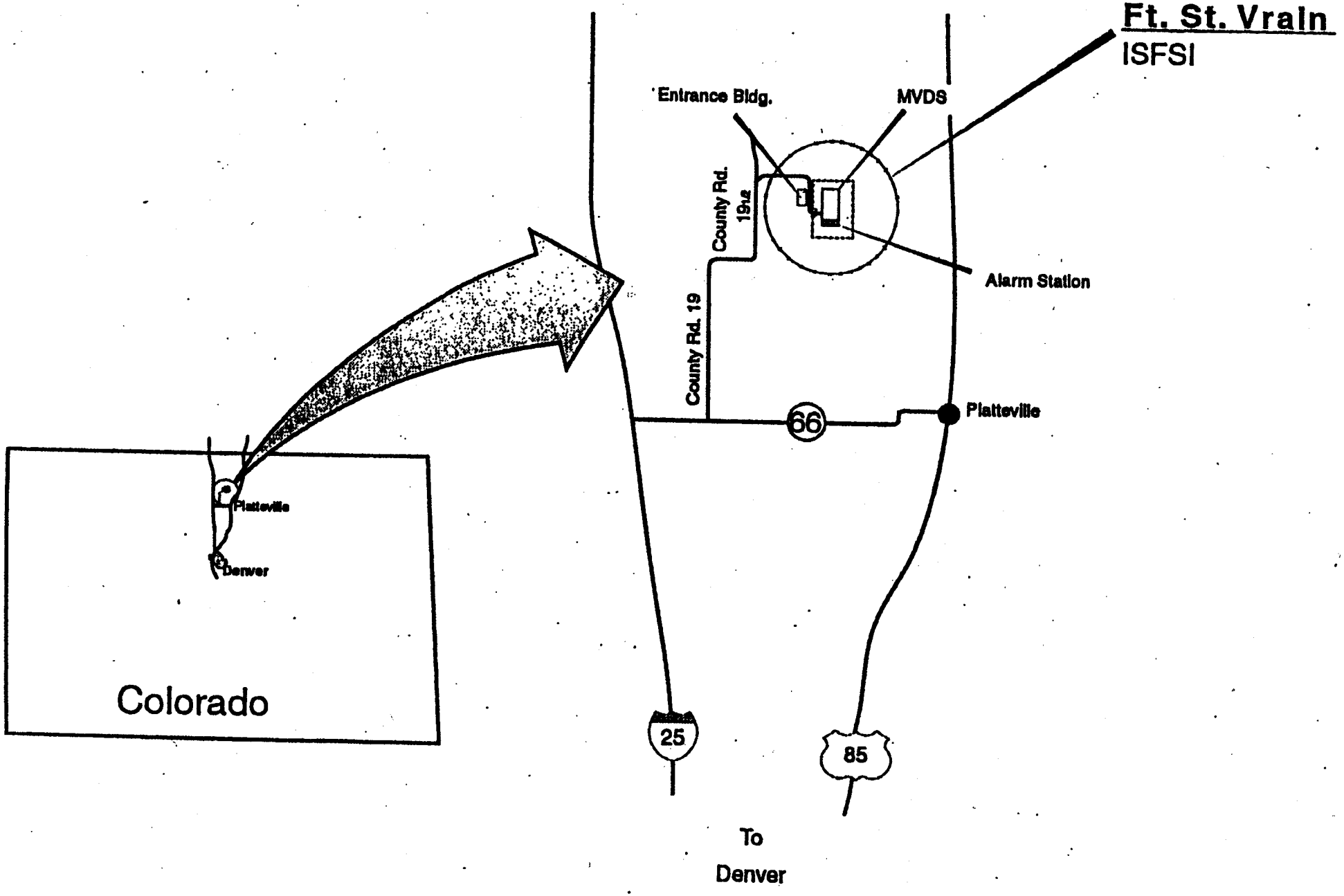


TAN

TAN 607
TMI Project

INTEC

CPP-603
CPP-666
CPP-749
CPP-1774 (TMI)
CPP-603 IFSF
TMI Project
Privatized DOE Dry Storage


Ft. St. Vrain
ISFSI
Entrance Bldg.
MVDS
County Rd. 19½
County Rd. 19
Alarm Station
66
Platteville
Platteville
Denver
Colorado
25
85
To
Denver

GJ99 0148a

INEEL SNF Facilities and Inventory - FY 2001 *

Area	Bldg	Description	Function	Inventory (FU) [1]	Inventory (MTHM) [2]	Inventory (M3)
INTEC	CPP-603	3 Pools	Wet Storage	0	0.00	0.00
		Fuel Canning Station	Drying Facility	0	0.00	0.00
		Irrad Fuel Stor Facility	Dry Storage	4,331	10.68	88.84
	CPP-666	6 Pools	Wet Storage	10,828	21.49	219.19
	CPP-749	Below Grd Vault	Dry Storage	875	78.43	48.98
	CPP-1774	Above Grd Modules	Dry Storage	341	81.59	128.90
	Priv DSF	Handling Facility	Handling/Packaging	NA [3]	NA [3]	NA [3]
		Above Grd Vault	Dry Storage	NA [3]	NA [3]	NA [3]
TAN	TAN-607	Pool	Wet Storage	65	3.71	3.45
		Hot Shop	Handling	0	0.00	0.00
	TAN-791	Above Grd Casks	Dry Storage	63	38.37	10.67
TRA	TRA-603	MTR Canal (Pool)	Wet Storage	104	0.26	0.60
	TRA-670	ATR Canal (Pool)	Wet Storage	NA [4]	NA [4]	NA [4]
PBF	PBF-620	Pool	Wet Storage	2,425	0.56	0.84
FSV	ISFSI	Above Grd Vault	Dry Storage	1,464	14.73	130.27
Current Inventory SNF				**20,496**	**249.82**	**631.74**
SNF Receipts [5]				**13,693**	**61.59**	**99.07**
SNF Subtotal				**34,189**	**311.41**	**730.81**
Unirradiated Fuel [6]				**441**	**14.68**	**6.12**
Grand Total [7]				**34,630**	**326.09**	**736.93**

1 FU = Fuel units.
2 MTHM = Metric tons heavy metal.
3 NA = Not applicable, not operational.
4 NA = Not applicable, not in the program, supporting a functional facility.
5 Estimated new receipts, post FY2000, includes DOE/NE direct shipments to SRS/TBD (4.22 MTHM).
6 Unirradiated fuel is managed in CPP-603/IFSF and CPP-749.
7 Total amount of SNF that will have been managed at the INEEL during the period from FY2000 to FY2035.
* Data as of 10/01/00.

III. INEEL's SNF Programmatic End Goals

1. **Safe and efficient management of all materials within our custody.**

2. **Protection of the Snake River Aquifer.**

3. **Removal of all DOE-controlled legacy SNF from the states of Idaho and Colorado by 01/01/2035.**

IV. INEEL's Spent Fuel Management Strategy

1. **Perform national responsibilities:**
   - **Receive domestic fuels; and**
   - **Receive FRR fuels.**

2. **Address vulnerabilities – place wet stored SNF into interim dry storage by 12/31/23.**

3. **Consolidate spent fuel storage areas – bring all SNF into a single management area at INTEC.**

4. **Make DOE-owned legacy SNF road-ready – support removal from Idaho and Colorado by 01/01/35.**

V. INEEL SNF Drivers/Milestones

1. Departmental NEPA Documents

- DOE PSNFM and INEL ER/WM FEIS – 05/95
- DOE NWNpP CFRR SNF FEIS – 05/96

2. DNFSB Oversight

- DNFSB 94-1 IP/SSIP – 02/28/95; 10/95

3. Enforceable Agreements

- ID Court Order – 12/22/93
- ID Settlement Agreement – 10/17/95
- CO Agreement – 02/13/96
- NYSERDA Agreement – 11/13/86

V. INEEL SNF Drivers/Milestones (Continued)

1. **Departmental NEPA Documents**
   - **Consolidate and manage non-Al clad fuels for the complex**
   - **Implement appropriate projects and facilities for final dispositioning of SNF**
   - **Receive and manage FRR SNF**

2. **DNFSB Oversight**
   - **Out of CPP-603 by 12/31/00 ✔**

3. **Enforceable Agreements**
   - **Out of CPP-603 by 12/31/00 ✔**
   - **Limitations of receipt of SNF to the INEEL**
   - **All SNF out of wet storage by 12/31/23**
   - **All DOE-controlled SNF out of Idaho by 01/01/35**
   - **All DOE-controlled SNF out of Colorado by 01/01/35**
   - **All WV SNF out of New York by 12/31/94**

VI. The Ten Year Plan

- **The Environmental Management Ten Year Plan Guidance Doc (July 1996)**
- **Accelerating Cleanup: Focus on 2006, Draft (June 1997)**
- **Accelerating Cleanup: Paths to Closure (June 1998)**
- **Status Report on Paths to Closure (March 2000)**

VII. The Site-specific Ten Year Plan

- The Environmental Management Complex-wide Ten Year Plan
- Site-specific Ten Year Plan
  - Project Baseline Summaries
  - Material Stream Disposition Map
  - Life-cycle Planning Packages (Life-cycle Baseline)

VII. INEEL Site-Specific TYP

SNF Program

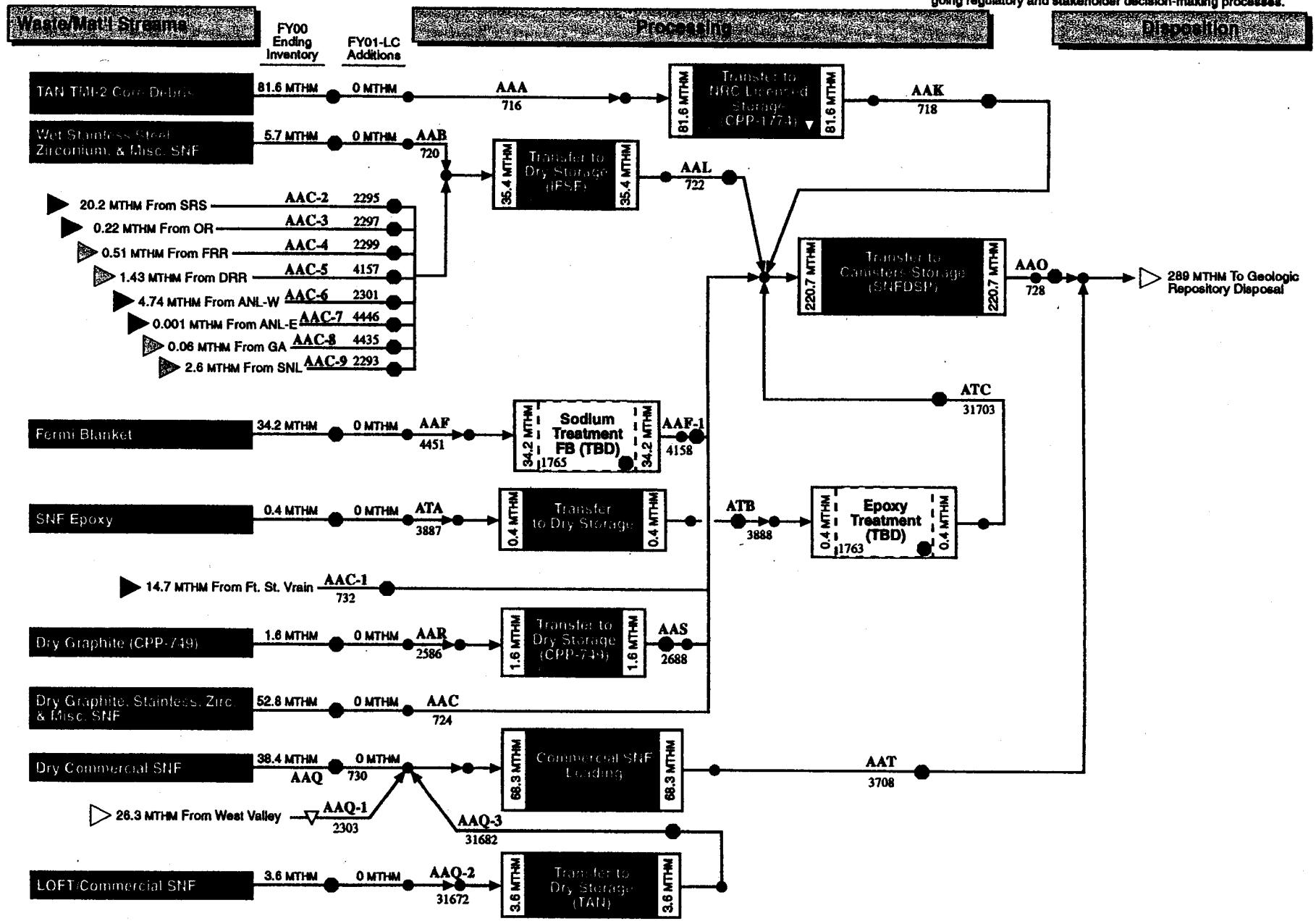
Project Baseline Summaries

ID-SNF-101	National Spent Nuclear Fuel Program	Arenaz
ID-SNF-102	Integrated SNF Program	Willcox
ID-SNF-103	Emptied SNF Facilities	Ramsey
ID-SNF-104	Constructed New Facilities	Beller
ID-SNF-105	Dry Transfer and Storage Project – Privatized	Schwartz

INEEL SNF Disposition Map

IPABS FY2001 Approved Data (8/28/01)

PREDECISIONAL DRAFT
This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the on-going regulatory and stakeholder decision-making processes.



9/18/01

INEEL SNF Disposition Map

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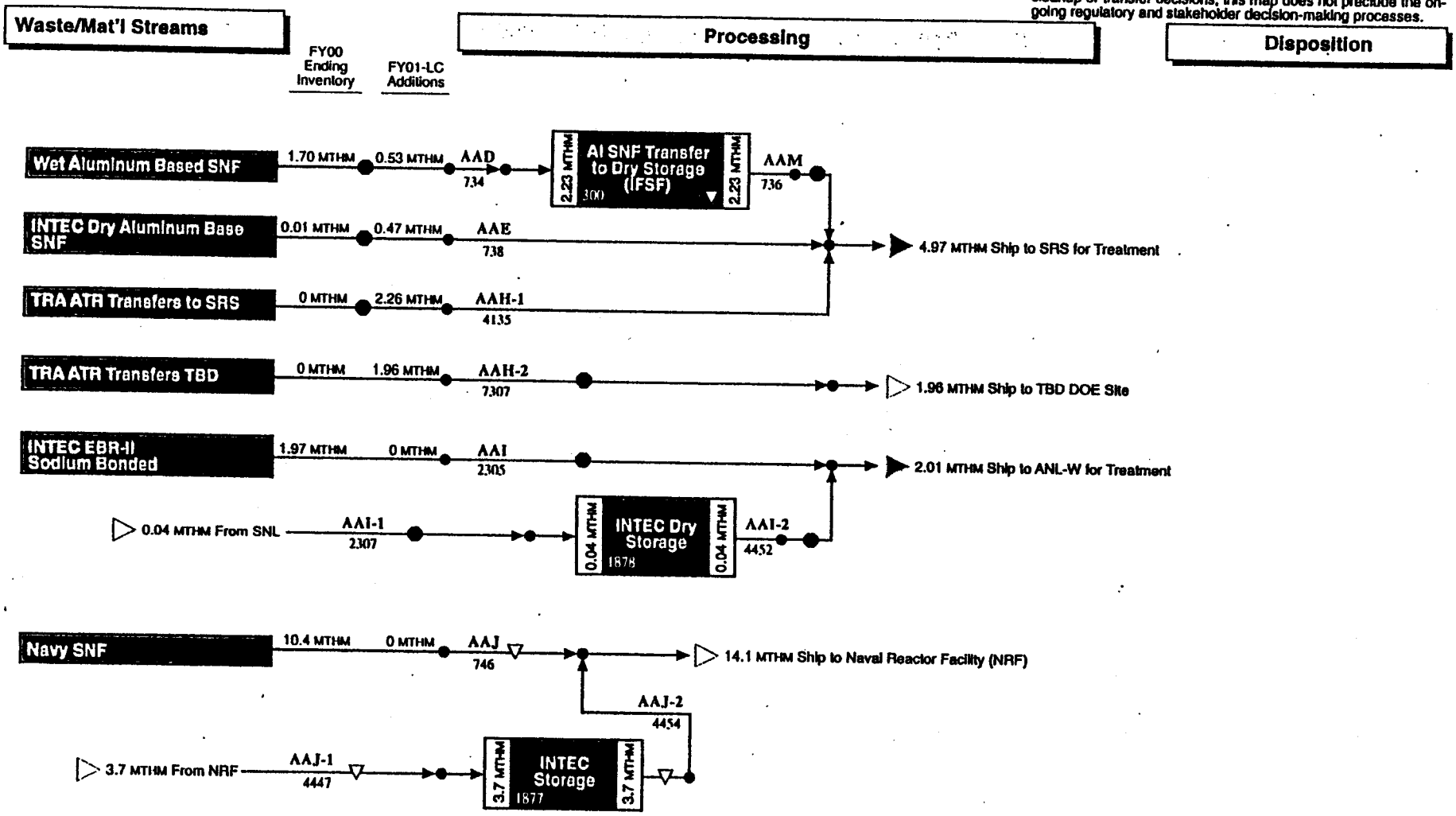


KEY: Albuquerque | Carlsbad | Chicago | Idaho | Nevada | Oak Ridge | Oakland | Ohio | Richland | SRS | Other | Unknown | Off-site Interface: | On site Interface:

9/18/01

VIII. INEEL SNF Baseline Disposition Map (FY1999 – 2035)

- **Facilities – Twelve**
- **Fuel Streams – Twenty-six**
- **Total Fuel Mass – 312 MTHM**

VIII. INEEL SNF Baseline Disposition Map (Con't)

1. Facilities

Area	Bldg	Function
INTEC		
	CPP-603	W - Basins
		D - IFSF/FCS – Dry Storage/Canning
	CPP-666	Basins
	CPP-749	Dry Well
	CPP-1774	Dry Storage
	CPP-17WV	Dry Storage (Planned)
	Priv SNFDSP	Dry Storage/Packaging (Under design)
TAN		
	TAN-607	Basin/Hot Shop
	TAN-791	Dry Storage
TRA		
	TRA-603	MTR Canal
	TRA-670	ATR Canal
PBF		
	PBF-620	PBF Pool
FSV		
	ISFSI	Dry Storage

VIII. INEEL SNF Baseline Disposition Map (Con't)

2. Fuel Streams

Stream AAA [TAN] → Packaged OnS → Stored (1774) → Repackaged/Stored (Priv DSF) → Repository

Stream AAB [603, 666, PBF] → Packaged/Dried/ Stored (FCS/IFSF) → Repackaged/Stored (Priv DSF) → Repository

Streams AAC, $AAC_{2\text{-}10}$ [IFSF, 749, OffS[1]] → Repackaged/Stored (Priv DSF) → Repository

1 Off-site SNF may require drying.

VIII. INEEL SNF Baseline Disposition Map (Con't)

2. Fuel Streams (Con't)

Stream AAC_1/AAA_{FSV} [FSV @ CO] → Repackaged (Priv DSF) → Repository

Stream AAF_{FB} [749 1ST Gen] → Trtmt-TBD → Repackaged/Stored (Priv DSF) → Repository

Stream AAR [749 1ST Gen] → Stored (749 2nd Gen) → Repackaged/Stored (Priv DSF) → Repository

VIII. INEEL SNF Baseline Disposition Map (Con't)

2. Fuel Streams (Con't)

Stream ATA $_{Epoxy}$ [TAN, MTRC[2]] → Packaged/Dried/ Stored (FCS/IFSF) → Conditioned-TBD → Repackaged/Stored (Priv DSF) → Repository

Streams AAQ, AAQ_1 [TAN, WV] → Repackaged/ Stored (TAN) → Repository

Stream AAD [603, 666, TRA[3]] → Packaged/Dried/ Stored (FCS/IFSF) → SRS

2 Fuel will be dried if necessary.

3 Through 2005, SNF goes into CPP-666 and then to IFSF. After 2005, SNF goes from ATRC directly into IFSF. After 2010, SNF goes from ATRC directly to SRS.

VIII. INEEL SNF Baseline Disposition Map (Con't)

2. Fuel Streams (Con't)

Stream AAE [IFSF] → SRS

Stream AAH [TRA[3]] → SRS

Stream AAI_{Na} [666] → Trtmt-ANL-W

Stream $AAI_{1\ NA}$ [SNL] → Repackaged/Stored [IFSF] → Trtmt-ANL-W

3 Through 2005, SNF goes into CPP-666 and then to IFSF. After 2005, SNF goes from ATRC directly into IFSF. After 2010, SNF goes from ATRC directly to SRS.

VIII. INEEL SNF Baseline Disposition Map (Con't)

2. Fuel Streams (Con't)

Stream AAJ [666] → New Navy Storage (ECF)

Stream AAJ_1 [Navy[4]] → [666] → New Navy Storage (ECF)

4 **Through 2001, naval SNF goes into CPP-666. In 2003 naval SNF will be transferred from CPP-666 directly to new naval SNF storage facility.**

VIII. INEEL SNF Baseline Disposition Map (Con't)

2. Fuel Streams (Con't)

TBD -Technology-dependent treatment need.

Title: Electrometallurgical Treatment
Need: Fermi 1 blanket Na-bonded fuel categorized as a reactive material, not welcome into the repository (34.2 MTHM).
Sponsor: DOE/NE and DOE/EM at ANL-W.
Available: NE/2000; EM/2004
EBR-II type SNF EM Stream Treatment Complete: 2008

Title: Conditioning
Need: Epoxy mounted samples likely a reactive component given radiolytic decomposition (0.4 MTHM).
Sponsor: DOE/EM
Available: Unknown

IX. The Plan

1. The LCB Structure (PBS ID-SNF-103)

WBS	Project
C.1.04.02.01	CPP-603/Basins Emptied of SNF
C.1.04.02.02	CPP-666 Emptied of SNF
C.1.04.02.03	TAN Emptied of SNF
C.1.04.02.04	FSV Emptied of SNF
C.1.04.02.05	CPP-749 Emptied of SNF
C.1.04.02.06	CPP-603/IFSF Emptied of SNF
C.1.04.02.07	CPP-1774 Emptied of SNF
C.1.04.02.08	Privatized SNFDSP Emptied of SNF
C.1.04.02.09	CPP-651 Emptied of SNM
C.1.04.02.11	CPP-17WV Emptied of SNF

IX. The Plan

2. LCPP Cost Summary (FY2000-FY2035)

PBS	Constant Dollars (FY 2000)	Escalation and Contingency
ID-SNF-101	315M	485M
ID-SNF-102	676M	907M
ID-SNF-103	1,557M	2,735M
TOTAL	2,548M	4,127M

IX. The Plan

3. Major Milestones

FACILITIES	Planned Out By	Revised
1. CPP-603 underwater basin storage	12/31/00	4/28/00 a
2. CPP-666 underwater basin storage	09/30/06	2011
Navy fuel out by	09/30/11	2009
3. TAN underwater pool	09/30/06 b	09/03
Dry pad storage	2015 c	2017
4. CPP-749 Dry Storage Facility	09/30/11	2010
5. IFSF	12/29/23	2034

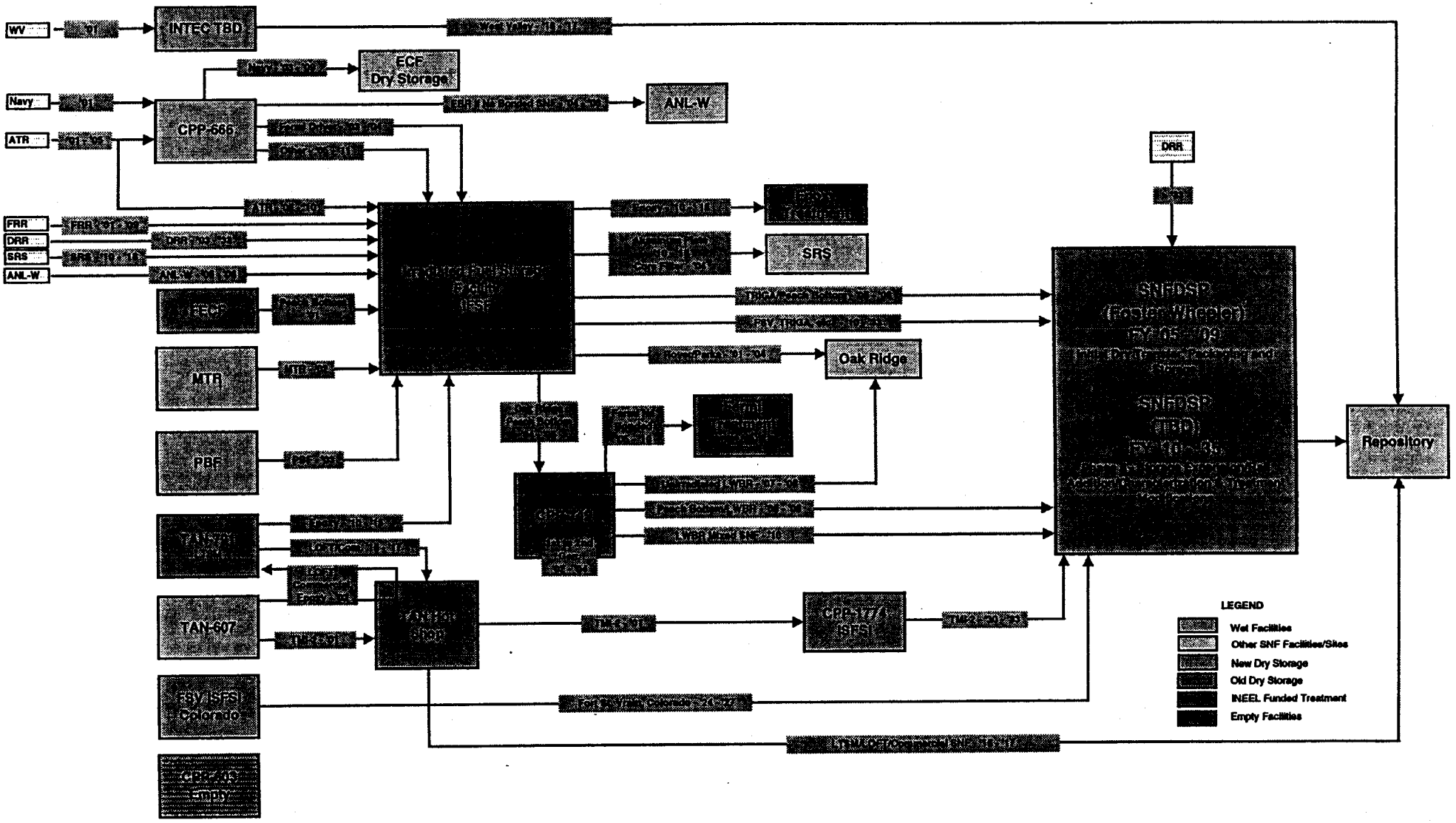
a actual; b fuel out; c close

IX. The Plan
3. Major Milestones (Continued)

FACILITIES	Out By	Revised
6. DOE Dry Storage Facility	03/31/99 d	03/31/99 a
CPP-1774	01/01/34 c	09/33
7. Privatized Dry Storage Facility	07/01/03 d	2005
	01/01/35 c	NC
8. Ft St Vrain Independent Spent Fuel Storage Installation	09/30/27	NC
9. MTR Canal	09/01	10/02
10. PBF Pool	09/02	10/03

c close; d operational; NC no change

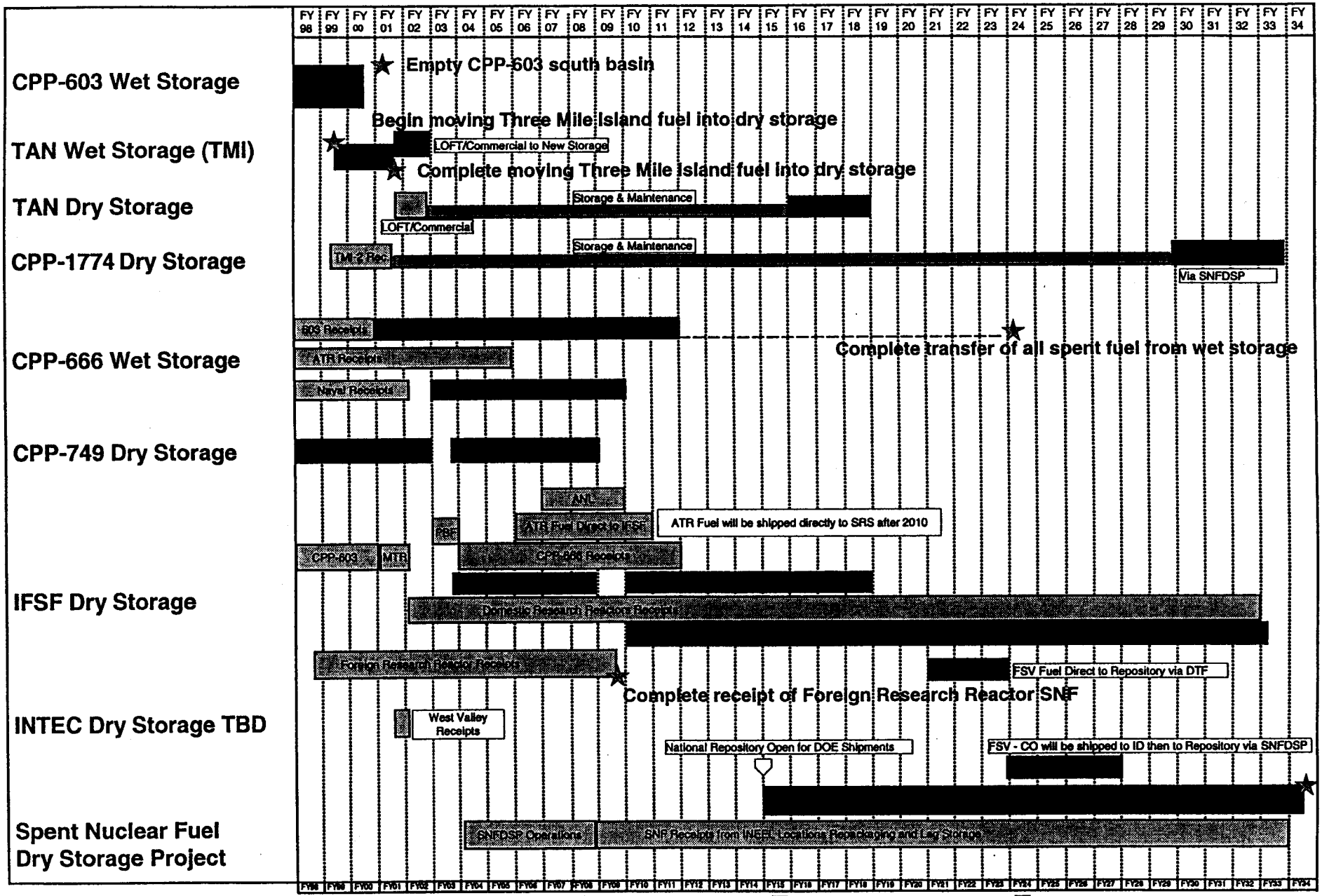
INEEL Spent Nuclear Fuel Facility Process Flow



Rev. 1a removes non-EM fuel movements.

SNF OPERATIONS SCHEDULE

01/24/01



IX. The Plan

4. Considerations

- Priority of program budget under level spending scenario
- Repository requirements (undefined)
- Aging facilities and equipment
- Technology limitations
  - Na-bonded and epoxy SNF treatment
  - fissile material measurement
- Stakeholder interactions

X. Program Status and Risk

Requirement:

Idaho/DOE Settlement Agreement Paragraph E.8: DOE shall complete the transfer of all spent fuel from wet storage facilities at INEL by December 31, 2023.

Status:

Area	Facility	Planned Date	Actual Date
TRA	ARMF/CFRMF Canals	-	10/28/97
INTEC	CPP-603/Basins	12/31/00*	04/28/00
TAN	TAN-607/Basin/ TMI Campaign	06/01/01*	04/20/01
TAN	TAN-607/Basin/ LOFT-Comm Campaign	09/03	
TRA	TRA-603 (MTR Canal)	10/02	
PBF	PBF-620 (PBF Pool)	10/03	
INTEC	CPP-666	09/12	

* Enforceable Agreement Milestone

X. Program Status and Risk

Requirememt:

Idaho/DOE Settlement Agreement Paragraph C.1: DOE shall remove all spent fuel, including naval spent fuel and Three Mile Island spent fuel from Idaho by January 1, 2035.

Status:

Contract awarded to Foster Wheeler Environmental Corp. for the design, NRC-licensing, construction, and operation of the privatized Spent Nuclear Fuel Dry Storage Project for repackaging and loadout of SNF from Idaho

05/19/00

X. Program Status and Risk

Status

- All EA milestones completed on time or early.

Vulnerabilities

- Last vulnerability under DNFSB 94-1 to be remedied 12/31/00. Completed 04/28/00.
- Current risk to public, workers, and environment – low. Fuels are well managed.

Future Risk

- Long term funding impacts uncertain.
- Repository operational date uncertain.
- Receipt of off-site SNF can be impacted by SA compliance.

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